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anything for them. They are keenly disappointed at not being acknowledged as perfect in their studies, and are ever anxious to show their learning. It takes a long time to work them down to their proper level. Teacher and pupil should ever seek truth. They must come to their work in a spirit of earnestness, absolute honesty, candor, and sincerity, otherwise the work will be a failure. The really true teacher is an inspired man. He draws the pupils around him, because he is himself interested in his studies. Such were the great teachers of old, and if any of us now succeed in any measure as teachers, it is only so far as we possess interest and enthusiasm in our studies.

Frederic Harrison, with forty years' active experience in educational work, in writing of late, said: "I have for years past joined in the discussions and conferences on this question; and now I feel at times that we are further off the right path than ever, as if our whole system were a failure. There are hours when I feel about education nothing but this, — wipe it out, and let us begin it all afresh." This was written a few months ago with reference to education in England; but it was in relation to some of the very matters that are engaging our attention in this country at the present time. I cannot go so far as Harrison does in this expression of his opinion. I know the public schools of this country have done and are doing a useful and a noble work. The nation cannot do without them, nor can it afford to permit their usefulness to be impaired through lack of support and sympathy. Give them the support and encouragement they need and deserve, and they will be improved, and the country profited thereby. Honest and intelligent interest in the schools should lead to improvements in their condition. If changes in the system seem desirable, let them be made. Let neither prejudice nor individual selfishness stand in the way. It has more than once been stated by American educators of experience and high standing that science-teaching is difficult, and that there are few, very few, teachers capable of engaging in it. I fear there is much truth in this statement. Science, like any other subject of education, must be taught by a competent person. It is folly to expect proper results from persons who have not both the natural and the acquired qualifications of a true teacher, and it is much greater folly to expect them from those who have neither of these two qualifications. Teachers possessed of both are indeed rare; and how can we expect them to be plentiful so long as the trustees and boards of education, and the people behind the trustees and boards, remain satisfied with so low a standard? When the public come to realize that a higher standard of qualifications, mental and moral, on the part of the teacher, is absolutely necessary for the welfare of our country, when they come to have a heartier appreciation of high-class attainments, they will be willing to make adequate compensation for the teacher's labors and influence, they will seek teachers of longer and better training and experience, teachers who carry with them an atmosphere of a higher and a more inspiring character. I have hope that this time will come. Let us do what we can to bring about these conditions. For the sake of the youth of our land, for the sake of the material, the physical, the moral, and the intellectual advancement of our country, for the sake of everything that can contribute towards the promotion of the civilization of this great nation, let us earnestly pray that the dawn of that day may be hastened, that the free public-school system, which forms a net-work throughout the length and breadth of this Union, may, more truly and fully than ever in the past, yield those practical and beneficent results anticipated by its founders, hoped for by its friends, and rendered necessary by the foundation principles of the government of a free people.

#### NOTES AND NEWS.

A REPORT on the petroleum trade of the Caucasus has been sent to the Turkish Government by Aassib, the Turkish Consul-General at Tiflis, and some interesting extracts from it are quoted in the *British Board of Trade Journal*. The petroleum springs of the peninsula of Apcheron, not far from the place at present occupied by the town of Baku, were known, according to the writer, several centuries before the Christian era, and the phenomena produced by them, totally inexplicable in those barbaric

ages, gave rise, he says, to the worship of the Guebres, followers of Zoroaster, which lasted into the nineteenth century, for the temple of the worshippers of eternal fire is seen to the present day. The springs of Balakhani are situated 20 kilometers from Baku on a bare and arid plateau, swept by the winds, at an elevation of about 60 meters above the level of the Caspian Sea. The petroleum lands occupy an area of about 8 kilometers. At the present time Balakhani and Sabountchi possess more than 1,000 wells, some of them newly bored, producing in twenty-four hours as much as 400,000 pounds. An era was marked in the history of the naphtha industry by the house of M. Nobel, which started at Baku in 1874, and in the following year purchased a small business and undertook the production of petroleum on a small scale. At that time the conveyance of petroleum to Baku was effected by means of carts and leather bottles. M. Nobel endeavored to show the absurdity of this primitive method of transport, and recommended that pipes should be constructed, but the majority of the merchants rejected the proposal. He then constructed the first pipe at his own cost, and demonstrated the utility of it to his colleagues, several of whom very soon imitated his example, and Baku has to-day a dozen lines of pipes, each of which cost more than 100,000 roubles. The same house, dissatisfied with the system of shipping petroleum in barrels, proposed to the Kavkaz and Mercury Navigation Company of the Caspian and the Volga that they should build tank-boats for the exclusive conveyance of petroleum. This proposal having been rejected, the firm constructed several of these vessels at their own expense. This innovation, of which even the Americans had not yet thought, was accepted by the two petroleum-producing countries, and tank-boats, the number of which is constantly increasing, are to be found on all the waters of the civilized world. It is also to M. Nobel that those gigantic reservoirs of iron which contain hundreds of thousands of naphtha products are due. They are to be seen in large numbers at Baku, Batoum, and everywhere else where petroleum is carried in bulk. The series of innovations by M. Nobel do not stop there. With a desire to improve land-carriage he proposed to the Griazi-Tsaritsine Railway Company the construction of special tank-wagons for the transport of the petroleum, guaranteeing a load for them for several years. The railway authorities scoffed at the idea, and it was by the expenditure of very large sums that the Swedish merchant constructed for his own use the first tank-wagons. Scorn was immediately changed to enthusiasm, and to-day thousands of these wagons circulate on the railways of Caucasia and Griazi-Tsaritsine.

—The following appointments have been made at the Michigan Mining School: Dr. George A. König, late of the University of Pennsylvania, professor of chemistry; Edgar Kidwell, professor of mechanical and electrical engineering; Fred F. Sharpless, professor of metallurgy; Fred W. Denton, professor of civil and mining engineering. All these except Professor König have been connected with this school for several years as instructors, and have earned their promotion. Dr. Horace B. Patton has been appointed instructor in mineralogy and petrography; Dr. Alfred C. Lane, instructor in petrography and geology. These two have been connected both with the State Survey and with the Mining School for several years. Mr. Carroll L. Hoyt, a graduate of Cornell University in the mechanical engineering department, has been appointed instructor in drawing and mechanical engineering.

—A cuneiform tablet has been found at Tel Hesi, the ancient Lachish, by Mr. J. F. Bliss, who is excavating for the Palestine Exploration Fund. According to Professor A. H. Sayce of Oxford it contains the name of the same officer who is mentioned on tablets from Lachish, found some years since at El Amarna in Egypt.

—Sir John Lubbock will shortly issue, through the Messrs. Macmillan & Co., a work entitled "The Beauties of Nature and the Wonders of the World," uniform with his "Pleasures of Life."

—Messrs. Macmillan & Co. have in press, to be issued very shortly under American copyright, a long-expected "History of Early English Literature," by Rev. Stopford A. Brooke.